International Journal Dental and Medical Sciences Research
Volume 5, Issue 2, Mar - Apr 2023 pp 120-123 www.ijdmsrjournal.com ISSN: 2582-6018

Isolation and Speciation of the Candida by using Sabouraud's Dextrose Agar and Hi Crome Candida Agar in Cancer patients.

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Date of Submission: 01-03-2023 Date of Acceptance: 10-03-2023

ABSTRACT

Introduction:
Candida species are normal commensals in the oral cavity. Oropharyngeal candidiasis is an opportunistic fungal infection commonly seen in cancer patients.From oral cavity most frequently isolated species is Candida albicans but role of non albicans Candida is also increasing proportionately which necessitates their identification. The aim of the present study was isolation and speciation of the Candida by using Sabouraud'sDextrose agar andHiCrome Candida agar in cancer patients

Material and methods:
Total of 100 oral thrush samples collected frompatients suffering with different types of cancers who are undergoing chemotherapy were included in the study. All sample were inoculated onSabouraud'sDextrose agar as primary culture. Gram staining was done for all the isolates.Candida albicans was confirmed by germ tube formation and chlamydospore production.Speciation was done by using HiCromeagar on the basis of colour.

Results:
Out of 100 samples 27were culture positive for candida species. Most common isolated species is Candidaalbicans 16 (59.26%) followed by non albicans species (40.74%) isolated - Candida tropicalis 6 (22,22%), Candida parapsilosis 3 (11.11%) Candida kefyr 2(7.41%)

Conclusion:
In the present study we observed significant prevalence of oral candidiasis by Candida albicans along with non albicans Candida species in the patients who were undergoing chemotherapy. HiCrome Candida agar is an excellent media for early identification and speciation of Candida species

I. INTRODUCTION

Candida species are yeast like fungi [1]present in the human body and his surrounding [2] and are most common cause of fungal infections[1]. Fungal infections occur as a result of defect in immune system.Immunocompromised state of individual is developed due to use of wide spectrum antibiotics, immunosuppressive therapy, HIV and increased incidence of diabetes[3].Cancer patients are more prone to fungal infections especially by Candida species because of their immunocompromised state and effect of chemotherapy[4]. Candida species are normal flora of oral cavity and their transition to opportunistic pathogen may be associated with virulence factors of organism and host factor [5] when the host immune defenseare impaired or disarrangement of normal oral microbiota, Candida species will take the opportunity to colonise and cause infections[6].Oral Candidiasis is an opportunistic infection seen commonly in cancer patients who undergoing chemotherapy[7].Among Candida species Candida albicans is most common agent causing oral candidiasis[8]. Recently there has been increase in proportion of non albicans Candida species because of extensive use of broadspectrum antibiotics, immune suppressants and antifungal drugs[9].So there is need for isolation and identification of Candida species for early antifungal therapy[10].Routien media used for cultivation of fungi is Sabouraud'sDextrose agar[11]. Main drawback is colonies appears similar on this media. Needs further investigations for identification[12].

HiCrome Candida agaris a differential medium which facilitates the identification of Candida speciesby providing different colours to the colonies[13]. Major advantage of this media is that

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Volume 5, Issue 2, Mar - Apr 2023 pp 120-123 www.ijdmsrjournal.com ISSN: 2582-6018

identification of species can be done in shorter duration[14].

The aim of the present study wasisolation and speciation of the Candida by using Sabouraud's Dextrose agar andHiCrome Candida agar in cancer patients.

II. MATERIALS AND METHODS

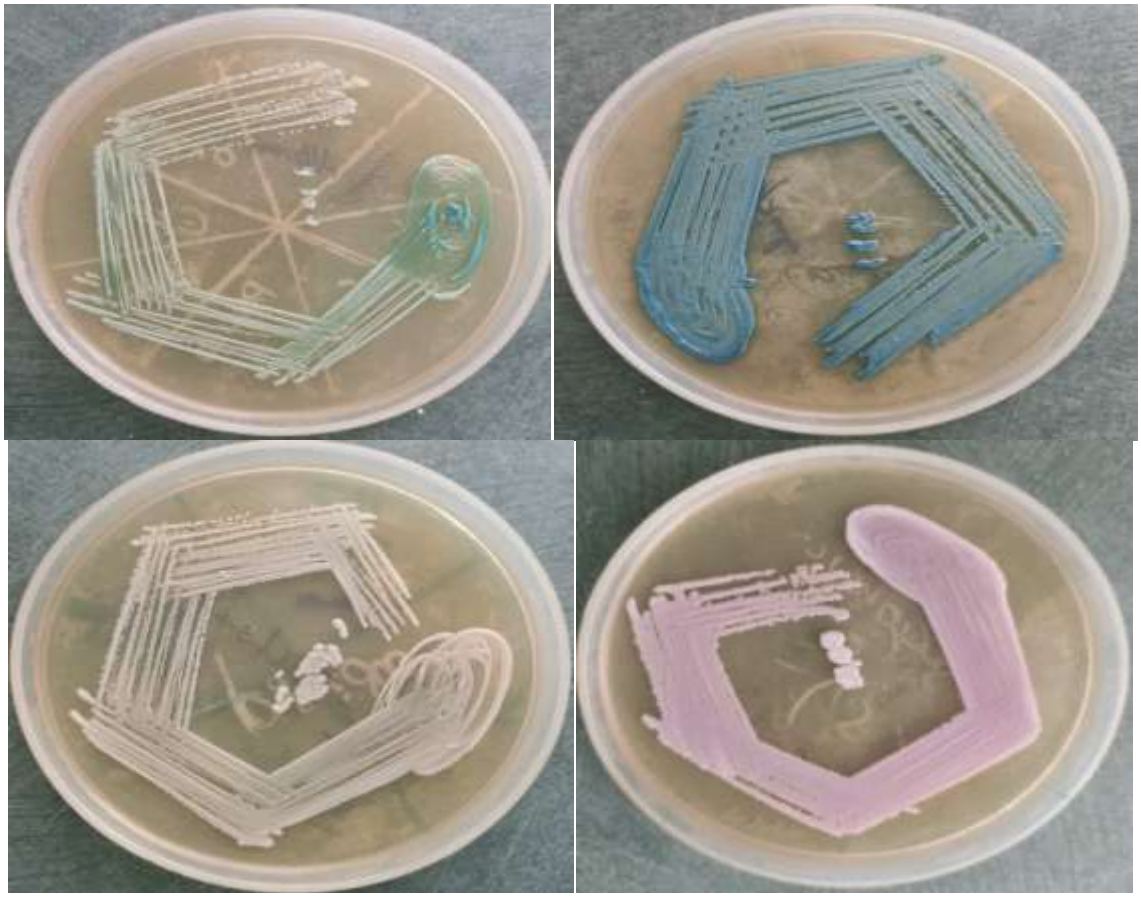
Thisprospective study was carried out over a period of 4 months fromJanuary to April 2022 in Department of Microbiology ViswabharathiMedical College and General Hospital.

Total 100 oral thrush samples collected from cancer patients undergoing chemotherapy were included in the study. All the samples were inoculated on Sabouraud's Dextrose agar. the plates were incubated at 25- $37^0$for 48-72 hrs. Colonies appeared as creamy white smooth pasty with a yeast odour within 2-3 days.

Candida isolates were identified by Gram stain,Germ tube formation, chlamydospore and blastomere production on cornmeal agar.

For species identification the isolates from the SDA medium were inoculated on to HiCrome agar incubated at 37^0 for 48 hrs. The species were identified by characteristic colony colours as per HiMedia manufacture data.

Candida albicans- Light green
Candida tropicalis -Blue
Candida parapsilosis-Creamy white
Candida kefyr -Pink to Purple



III. RESULTS

Total 100 oral thrush samples collected from the patients. Among them 53 (53%) were males and 47(47%) were females.

Out of 100 samples 27 (27%) were culture positive for Candida species. Candida albicans was the predominant isolate 16(59.26%), followed by non albicans species were isolated - Candida tropicalis 6 (22,22%), Candida parapsilosis 3 (11.11%) Candida kefyr 2(7.41%)

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Age wise distribution

Age in years	Culture positive
21-30	1
31-40	5
41-50	7
51-60	11
61-70	3
	27

Majority of the patients were between age group of 51-60 followed by 41-50 and 61-70 years.

Candida species isolates

Species	total
Candida albicans	16(59.26%)
Candida tropicalis	6 (22.22%)
Candida parapsilosis	3 (11.11%)
Candida kefyr	2 (7.41%)
	27

The most common species isolated is Candidaalbicans 16(59.26%), followed by non albicans species - Candida tropicalis 6 (22.22%), Candida parapsilosis 3 (11.11%) Candida kefyr 2(7.41%)

IV. DISCUSSION

Opportunistic fungal infections are increasing due to increase in number of immunocompromised individuals undergoing RT and CT, prolonged hospital stay, Diabetes, HIV[15].Radiation induces the erythematous lesions and ulceration on oral mucosa and compromised the salivary function is thought to be a major contributing factor for oral candidiasis. major predisposing factor for candidiasis in CT and RT undergoing patients is suppressed antifungal activity of leucocytes and candida virulence.[16]

In the present study Candida albicans 16 (59.26%) was the most common isolate which correlates with the study of YogithaPVV et who reported (60.5%).Amador et al reported 68%[17,]Shaheen taha reported 56%[18]and Hema Suryawanshi et al reported 84.62%.[19]

In the present study non albicans species isolates were 11(40.74%) which correlates with Yogitha PVV[3] reported 39.5%.Shaheen taha reported 44%[18]

In the present study non albicans species isolates were C. tropicalis, C. parapsilosis, C.kefyr. Among non albicans species C.tropicalis was the predominant isolate 6(54.54%). Which correlates with YogithaPVV,et al reported 46.7%.[3]

In the present study the prevalence of Candida is more in males 59.26% correlates withYogith PVV reported 63.1%,[3]MohdSuhil Lone et al reported 54%[20]

V. CONCLUSION

In the present study we observed significant prevalence of oral candidiasis in the patients who underwent chemotherapy and radiotherapy and by non albicans candida along with candida species. Since it may result in dissemination of the disease early speciation is required. more so because of difference in antifungal susceptibility. CHROM agar is an excellent media for early identification and speciation of candida species

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